

DOCUMENT RESUME

ED 134 304

PS 008 918

AUTHOR Fowler, William; Kahn, Nasim
TITLE Illusion and Reality in Community Research on Day Care.
PUB DATE 20 Apr 76
NOTE 50p.; Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, California, April 20, 1976)
EDRS PRICE MF-\$0.83 HC-\$2.06 Plus Postage.
DESCRIPTORS Child Care Workers; Child Rearing; Community Role; *Comparative Analysis; Cost Effectiveness; *Day Care Programs; Educational Assessment; Financial Support; Home Visits; *Infant Behavior; Infants; Measurement Techniques; Mothers; Parent Attitudes; *Parent Role; *Program Evaluation; Public Support; *Research; Student Teacher Ratio; Working Women
IDENTIFIERS *Ontario (Toronto)

ABSTRACT

This paper outlines the design and outcomes of an investigation comparing a day care program and home-rearing of infants and preschool children and discusses at length some issues involved in day care research. The study proposed to develop and evaluate a program at a Toronto municipal day care center which accepted infants, and compare the children's development over a 5-year span with a sample of home-reared children matched in pairs on selected characteristics. A total sample of approximately 60 infants (in successive cohorts) and home-reared mates was studied for varying periods. Day care infants ranged from 6-18 months at entry, from predominantly single-parent working-mother families of limited income, high school education, multiple ethnicity and recent immigrant status. Home-reared families were mainly intact. The dual program consisted of: (1) the day care component, with inservice caregiver and curriculum development; and (2) a parent guidance component, with a full-time parent guidance worker visiting homes from one to three more times a month. Four main types of activity defined were: basic care routines, play, planned teacher activities and excursions. Both children and parents were assessed regularly at entry and at six-month intervals on a battery of measures. Findings reported focus on quantitative outcomes of the children's competence development. The investigation suggests that multiple adult-child and peer relations in day care facilitate development as well or better than home care alone, particularly during infancy. Among the other issues discussed are research funding and planning problems and conflicts over the design and nature of research. (BF)

ED134304

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY.

Illusion and Reality in Community Research on Day Care

by

William Fowler

and

Nasim Khan

in collaboration with Woodbine Research Staff
and Woodbine Day Care Staff

PS 008918

Paper presented at a Symposium entitled Evaluation of Day Care at the Annual Meeting of the American Educational Research Association, San Francisco, April 20, 1976.

The experimental paradigm is both a framework for objectivity and a model of unreality in social action research. It inspires us to aim high in defining our treatment objectives and establishing our controls so that we may at once accomplish noble purposes and know whether we have accomplished them. But it also fails to prepare us for the irregularities and constraints, sometimes subtle, sometimes blunt, of institutional life.

When I accepted a Canadian Federal-Provincial Grant¹ almost five years ago to develop and evaluate a municipal day care program for infants, I anticipated difficulties, but not always of the magnitude and pervasiveness encountered. That I can report at all today longterm developmental findings of some interest, speaks to the possibilities of adapting the laboratory to the context of social collaboration, in this case with the hierarchy, staff and parents associated with the Day Care Center.

In this paper I shall outline in brief form the design and developmental outcomes of the investigation to date, as we near the point of termination. I shall then discuss at some length the problems confronted and the issues which have emerged in the course of the study bearing on the quality of the research and the quality of the day care itself.

Design of the Investigation

The study proposed to design a program of care for children in attendance at the first Toronto municipal day care center accepting infants and compare

¹The author wishes to acknowledge the longterm support of the Canadian National Department of Health and Welfare, The Ontario Ministry of Community and Social Services, and the Metro Toronto Department of Social Services in making this longitudinal study possible.

their development over a five year span with a comparison sample of home reared children matched in pairs on selected characteristics. The project began with 12 day care infants in the first year cohort, and their subsequently recruited home reared mates who were matched in age, sex, IQ, ethnicity, parent educational and occupational levels in a non-random, quasi-experimental design (Campbell and Stanley, 1963). Sibling status and parental age were also matched where feasible. As infants have graduated to the older age group or left the center, successive cohorts of day care infants have enrolled to accumulate a total sample of approximately 60 infants and their home reared mates, studied for varying periods. Day care infants have ranged from 6 to 18 months ($\bar{X}$ = 11) at entry and families are predominantly single parent, working mother families of limited income, high school education, multiple ethnicity and recent immigrant status. Home reared families are mainly intact, with the child cared for at home, by baby sitters in the few cases when the mother has later started to work.

The Program

The program has two components, each of which has several dimensions. The dual program is designed to optimize developmental potential through encompassing the two milieux where the child passes the bulk of his or her time under the influence of the major cultural agents responsible for the young child's socialization. There has been a program of day care, which necessarily involved inservice caregiver development as well as curriculum development, preparation of guides and materials, design of environment, and formative evaluation. The second component, parent guidance, has embraced techniques of child rearing and limited attention to problems of family living and community coping.

Each program component was designed to foster comprehensive care of the child on major psychological dimensions of cognitive, language, socioemotional, motivational and motor development, in a form appropriate to the milieu. The program in day care has been implemented through a full time program development researcher, working, demonstrating and discussing with teachers individually (including videotaping) and in group meetings. A full time parent guidance worker visits homes on the average of one to three or more visits per month, depending on need.

Both programs of care are patterned according to principles and methods of cognitive interaction, interpersonal relations and developmental perspective developed mainly in the course of this (Fowler, 1975) and an earlier investigation (Fowler, 1968, 1972). Among the principles and detailed methods developed are embedding teaching-learning activity in sensory motor play; maintaining a fluid, emotionally supportive atmosphere; balancing leadership with encouraging child initiative and peer interaction to foster curiosity, autonomy and cooperation; free use of language referentially synchronized with sensory motor activity and cognitive inquiry; teaching rules actively about concept regularities through problem solving with a variety of exemplars, avoiding rote procedures, to develop broad and adaptive cognitive complexity; developmental matching and sequencing of the complexity of activity and concepts according to level (rather than in specific steps or exemplars), to foster both orderly accumulation and developmental transformations.

This interactive, developmental approach to care and cognitive stimulation has been adapted to the types of activity prevalent in the life of the young child in the two social environments. Four main types of activity were defined, basic care routines, play, planned teaching activities and excursions. Because care activities occur many times each day in routines to service basic

food, elimination and other needs in culturally defined forms, the activities lend themselves to maintaining emotional attachments and fostering concept and language learning in depth. The repetitive character of limited examples provides an excellent framework to launch understanding of environmental regularities and primary social relations. The application of the interaction approach tends to insure the involvement of the child in socialization toward autonomy and personal care competence, avoiding the boredom and irritation of task centered ritual.

Play, the second primary activity of the young child, required a broader application of teacher-child relations. The chief concern was designing environments and monitoring activities to insure active experimentation with concepts in perceptual motor, language and sociodramatic play. The characteristic form of adult-child interaction changes markedly to a series of infrequent, brief counsels, demonstrations and mediations, guiding children to solve problems and persevere in play and interrelating, without intruding in their activity. Concern for play in the home has focused on setting up a suitable environment, usually regular corners of the kitchen and living room, close to the site of adult activities, where the mother can encourage play while tending to her own routines.

Planned concept learning programs, termed guided learning activities, have been built regularly into the children's care, both at home and in day care, as a third form of activity. More varied than care routines in the concepts embraced, guided learning activities have also been more systematic in their organization of concept sequences and involvement of sensory motor play. Concept sequences have been frequently presented in the context of information type theme programs, such as animals, household activities or food, running in cycles of several weeks. This approach has simplified preparation of materials and involvement of teachers in topics drawn from everyday life. But area

concept learning projects, such as in shapes or instrumental problem solving, have also been frequent. Teaching at home has centered more on informal play and regular story reading with the parent.

Excursions from day care have been largely confined to walks around the neighborhood and shopping areas, while families vary widely in both the frequency of special trips and the amount of attention paid to the child during travel. The scope of the interaction expands greatly during trips to embrace real life dimensions of the community and the form shifts to the molar actions necessary for travel and shopping combined with the ongoing process of observation. Much emphasis is placed on teachers and parents interrelating language, pointing to and observing activities through an interactive dialogue and inquiry about the passing scene.

Evaluation

The major focus in evaluation has been on the children's developmental progression. Assessment of parent modes and competencies in child rearing has been a secondary focus, but an equal concern for evaluating caregiver approaches and program delivery as a means of formative evaluation has necessarily been restricted by institutional constraints. Thus relations between parent measures and children's development have been extensively analyzed, but comparable analyses on caregiver-child relations are inherently limited by the multiple caregiving/relations of teachers and children.

Both children and parents have been assessed regularly at entry and at six months intervals on a battery of measures. The main instrument for assessing children, the Griffiths Scales of Mental Development (1954, 1970) provides measures of five specific competencies and an overall IQ index of development from 0 to 8 years and a sixth measure, practical reasoning, from 2 to 8 years. Because it was standardized in Britain, there are certain observed deviations from

Canadian population characteristics, which appear closer to U.S. patterns. It has, on the other hand, a high overall reliability (.77), has been found to correlate highly with the Stanford Binet (.80) and has individual scale reliabilities ranging from .625 to .943 (Weininger, 1970). Because of evidence emerging that the Griffiths might be underestimating ability, the Binet was added to the battery as a back up measure for day care subjects beginning in Year II. The concern has proved unfounded.

Two additional child measures have been employed, the Bayley Infant Behavior Record (1969) and the Schaefer and Aaronson Infant Behavior Inventory (1967), on which inter-observer reliabilities have ranged from .81 to .94. Neither measure is developmentally scaled, but both provide behavioral ratings on a variety of largely socioemotional and motivational characteristics to complement the competence orientation of the Griffiths Scales. The IBR is administered during mental testing and the IBI is administered on the basis of observations during day care. Both provide trend ratings rather than specific time samplings. A developmental monitoring system (Fowler and Khan, et al, 1975) for diagnosing and profiling the changing status of socioemotional, motivational and cognitive style characteristics is administered periodically to provide feedback to caregivers, along with specific recommendations for caregiving. The system is employed in conjunction with a complementary rating system on caregivers responsible for selected children in a modified, individual continuity of care program. Data from measures tied to specific concept learning projects will not be reported here today.

Parent measures have consisted mainly of two assessments of home background and parenting characteristics, the Caldwell Inventory of Home Stimulation (1969) and a Maternal Behavioral Rating Scale by Schaefer and Aaronson (1967), on which inter-observer reliabilities have ranged from .86 to .98. The former scales embrace both home and parenting characteristics relevant to all aspects of children's development including cognitive stimulation,

while the latter is the maternal counterpart of the infant scales centering on socioemotional and motivational processes. Both scales are administered as part of the regular six months battery, but never earlier than the second visit. Additional data on home background have been collected on each family through a parental interview scheduled designed to provide information on socioeconomic, educational, sibling and other familial characteristics.

Each mother is also tested once on the Wechsler Scale of Adult Intelligence as a means of distinguishing the influence of maternal basic cognitive competence from the influence of program factors. No strong assumption is made with respect to estimating genetic factors, for one reason, because the scale is limited for assessing recent immigrants.

Teacher and day care program related measures consisted of periodic monitoring of teacher behaviors during planned project development periods; two comprehensive assessments of the total day care program through an Environmental Profile (Fowler and Ogston, 1975) rating system; continuous collection of the frequency and type of guided learning sessions provided by caregivers to infants; and a study of "on floor" teacher child ratios. Teacher monitoring has included self and other administered ratings during guided learning, play and basic care routines, using scales covering cognitive, language, and socioemotional interactions for the purpose, including the developmental system described designed/above. The Environmental Profile, which provides ratings on five sets of environmental and program dimensions, the cognitive stimulation program, the children's socioemotional environment, the adult socioemotional environment, the play and learning materials and the physical environment, was administered once during Year III and once during the current year, Year V. The caregiver-child ratio study, employing a time sampling method over a five week period during Year II, provides separate ratio estimates for each age group.

Main Findings

The report on results will focus on quantitative outcomes of the children's competence development. Parent and teacher data and rating and monitoring data on socioemotional and motivational processes is more extensive and is therefore less complete. The pattern of competence development for unmatched pairs, as shown in Figure 1, follows different courses for the day care and home reared children. Starting at the same just above average GQ level ($\bar{X} = 107.3$) the day care curve rises from mean ages of 11 to 36 months to well above average ($\bar{X} = 114.0$), then falls off to just average ($\bar{X} = 100.6$) over three test periods (T_6-T_9) at a mean of 59 months. The declining N s for successive test periods that result from normal attrition and cohort accumulation make findings on later development of course less certain than those on earlier periods. In contrast the home reared children gradually decline to just average ($\bar{X} = 99.3$) to the mean age of 30 months, then gradually rise to their original level by the mean age of 51 months. (The N at 59 months is too small to include.) The pattern is similar on all specific competence scales, the greatest contrast at the 36 months peak coming in the superior day care level ($\bar{X} = 122.4$) attained on the performance scale, compared to the home reared group average level ($\bar{X} = 101.2$). None of the mean differences are significant at 11 months except language, favoring the home reared group; but differences are significant during intermediate testings, all favoring the day care group. None of the differences to this point is significant past 36 months, partly perhaps because of the small N 's. (The statistical analysis is based on matched pairs for smaller N s and through 44 months only, pending further analysis for the final version of the paper.)

The patterns of mean ratings on the children's motivations and socioemotional relations during mental testing are very similar for the two groups (Figures 2 and 3). The ratings of category clusters of behavioral characteristics are shown in

Figures 1, 2 and 3 about here

Figure 2. Nearly all ratings are above the scale midpoint throughout the test series and both groups display a slight tendency to rise on most ratings. The lower, four plus mean level for the personality style category reflects the fact that the optimum range of values for the component scales for this category fall in the middle ranges rather than at the maximum. Although the home reared group are generally slightly above/ the day care group on many of the ratings, only two differences between the groups are significant, both in favor of the day care group at T_3 , and which, given the number of comparisons, could be considered to be the result of chance.

The pattern of mean score ratings of behavior during play for the day care children over six test periods (T_1 - T_6) was similar to their patterns observed during the mental test situation, which are repeated here in Table 1 to simplify comparison. (Recall that no play ratings on home reared are available because of resource and design limitations that precluded establishment of a comparable play situation.) Nearly all mean ratings were well above the scale midpoint, 4.0 (or below for negatively valued items, e.g., distractibility, hyperactivity), and the general T_1 - T_6 trend for all scales was in a positively valued direction. There were occasional, small fluctuations observed for intermediate assessments, but final (T_6) mean ratings were lower on only one play rating scale (contentment) and one mental testing rating scale (degree of happiness). Many of the between test rises were significant at various intervals as were most of them for the final T_1 - T_6 comparisons available to this point in the investigation. It will be noted that the larger and significant gains for both the separate mental testing and play scales and the combined scales embrace mainly motivational characteristics (e.g., relations with the object world, attention span and perseverance). Socioemotional items on both scales tended to remain more stable (e.g., personality style, relations with the social world and contentment), although final mean ratings remain high and there is a positively valued large and significant initial-final decline in belligerence.

The patterns of mean parent ratings on the Caldwell Inventory of Home Stimulation for six test periods (T_1 - T_6), shown in Figure 4, indicates a very close alignment between the groups on all scale values and no significant differences at program entry (T_1). During the subsequent testings, mean ratings of the day care homes on most scales generally increased over those of the home reared children's homes through the third testing (T_3). Mean differences were significantly greater for the day care group at T_2 only, however, and only for the scale on quality of language environment and emotional responsiveness of mother and the average of all scales. Mean differences began to reverse to favor the home reared families at T_4 or T_5 , continuing at T_6 . Differences between groups are significant at T_5 on three scales, including two additional scales (organizing the environment and fostering maturity) which are not shown in Figure 4 because they are not scaled for earlier periods. The lack of significance at T_6 is probably a result of the reduced N. Mean differences nevertheless favored the day care group or were very close on three scales at T_6 .

All mean ratings for the day care parents on the Schaefer and Aaronson inventory of maternal behavior ranged from the scale midpoint to well above the midpoint scale values of 4.0 on the 7-point scales (Figure 5). There was also a general rise in rating values, but more in the early and middle phases of the program (T_2 to T_4), which then generally leveled off or declined slightly, similar to the pattern found for the Caldwell scales. The final mean T_1 to T_6 differences were nevertheless significant on three indices, including two category clusters, affective relations with the object world (motivations) and cognitive style, and one characteristic, verbal expressiveness. Mean final levels were also almost all above entry (T_1) levels, except interest in the

child's education, which nevertheless remained very high. Of the category clusters, socioemotional processes showed no significant gain between any tests including the overall T_1 - T_6 period--though the final mean level was both above the entry value and above the scale midpoint.

There is thus evidence of some declines in the quality of parenting of day care parents past age three compared to home reared parents, although the general level of quality remains moderately high in terms of scale values. These may well be contributing to the mean declines in the day care children's mental competence scores, since there are numerous significant correlations between various home characteristics and children's competence scores during various testings for both day care and home reared groups. On the other hand, regression analysis indicates only twenty per cent or less of the variance in children's later competence scores is accounted for by any later parenting characteristics; the rest is attributable principally to the socioeconomic index of quality of housing and maternal performance IQ. Because the still small N s for later periods make current analyses highly tentative these analyses will not be reported here.

Issues in Implementation

What sorts of problems did we encounter in the project and to what extent did we solve them? A short answer is that many sorts of problems were encountered, more of which we had to learn to live with than solve. For a longer answer we shall review project dimensions in the light of symposium perspectives, showing how often methodological problems were interlocked with logistical and political ones. Benefits are also closely linked to political questions, but we shall discuss the overall balance of benefits and deficits in a final section.

Design and Measurement Problems. To begin with, the research design was inherently channelized by several institutional constraints. The first of these was of course funding. The project was an invitational grant of a size that would support a research staff of less than four full time equivalents at the BA-MA level. There was then slightly less than one FTE for each of the major roles projected of curriculum, evaluation, parent guidance and data coordination-project supervision.

The second constraint was facilities. Given the limited staff we elected to concentrate energies in only one of the centers of the municipal system with which we were charged with collaborating. Unfortunately, the center could accommodate an average of no more than 12 infants per year, limiting the five year cumulative total to a maximum of 60 infants, assuming zero attrition. Indeed, only 8 per year had originally been projected, but we managed to convince the hierarchy that the number could be expanded to 12 by reducing the age composition of the entry group from 18 to 12 months. This is the first illustration of our experience that some institutional constraints are negotiable, that the social context can sometimes be bent to meet the demands of the experimental paradigm.

A third constraint was the givenness of the experimental sample. We started with infants already selected and enrolled in a day care center about to open. This had two consequences for design. Controls had to be recruited after the fact in a comparison group, quasi-experimental design (Campbell and Stanley, 1963) without random assignment of subjects to groups and sampling criteria were partially determined by agency admissions policy. The first effect was unalterable but the second again illustrates partial institutional adaptability to the concerns of research. Agency policy was modified to select infants as close to six months as possible, but policy was inflexible with regard to acceptance below six months as originally planned. Our experience elsewhere (Fowler, 1972) has indicated infants adapt and socialize to day care more easily before the modally critical 6 to 9 months period for separation anxiety. The issues from the agency perspective was the feared greater risk and cost of care for infants under six months. On such additional criteria as balanced sex ratio, minimally adequate developmental status, limited education, lower working class, single parent, working mother status and open ethnicity, agency policy and research criteria largely coincided. In practice, community demands for admission either right after birth or delay until the second year made recruitment for the 6 to 9 months range difficult during certain phases of the project. The net result of the extended Year I cohort range and later erosions is an 11 months mean entry age for the cumulative sample. For the same reason a few intact families edging toward higher education and income levels were admitted, despite the best agency efforts of and periodic recruitment efforts by the research staff. The efforts of agency personnel to meet agreed upon criteria further illustrates institutional adaptability to research.

A fourth constraint apparently originated at the level of the federal granting agency. The grantor's initial conception of the design defined our day care study as one of two components in a parallel comparison of the impact of day care versus home tutoring on early development. Integral to this conception was a cost-benefit comparison and the view that parent guidance should be controlled by excluding it from the day care component. The basic difficulty with that conception, as the respective principal investigators pointed out, were the gross differences between populations served by the two intervention studies. The maternally home bound, intact, multi-sibling and minimally educated, frequently welfare type family at whom the home tutoring project was targeted contrasted sharply with the moderately educated, single parent, single child, high coping, working mother in the day care population. Once again the results of negotiations yielded institutional adaptability to design constraints, but only after protracted negotiations and risk of project termination. There was no way sampling criteria could be reconciled to permit the cost-benefit type comparison projected by the grantor, given the population realities. The grantor continued to press for elimination of parent guidance. But the fact that the demand for exclusion had actually arisen only after the agency had accepted the submitted design; that the principal investigator took the position that parent guidance was essential, both psychologically and ethically, to the operation of infant day care; and of the irreality of the cost benefit comparison, all combined to result in parent guidance remaining.

Disagreements over design and the nature of the research continued, nevertheless. At the beginning of Year II, the provincial office responsible for administering and partially supporting the investigation formally requested the principal investigator to cease involvement in issues of day care organization and program, issues that had been dealt with at length in the Year I Progress

Report on program (Fowler and Khan, et al, 1972). Since there was no way of avoiding program issues without fundamentally altering the basic design, as the investigator replied, the matter appeared to rest until the following year. Curiously, the municipal authority, who might have been expected to be most likely to interpret the discussion as criticism, in fact publicly praised us for the report, saying the report would be most helpful to them in administering day care. The municipal day care agency has continued to be most cooperative throughout the five year period, although making only a few structural changes of the type we have discussed.

In the middle of Year III, the provincial office withdrew their support entirely, effectively terminating the project with two months notice, on the grounds that the research served no useful purpose, but declining to give reasons. The principal investigator then appealed to the head of the granting office nationally. In a formal hearing, the director allowed the investigator to rebut point-by-point the uniformly negative written evaluations that had been made but withheld by the joint provincial-federal supervisory group. The national director also forwarded copies of the latest progress report (for Year II) to psychologists in the field, whose apparently generally positive evaluations resulted in a decision to continue the investigations through the federal office alone. Needless to say the effects of these government judgments and the ensuing negotiations under conditions of protracted uncertainty, were damaging to research staff morale (resulting in one resignation) and research-day care staff relations and program were undermined during Year III.

Timing was a fifth constraint on implementation of the design. The grant invitation and allocation of funds came so quickly at a point that no lead time could be scheduled for planning and organization. There were multiple

consequences of this problem of timing, which naturally could not be altered through negotiation. In this case it was the design that had to bend. Among the salient consequences were a few weeks delay in testing the day care group and a several months delay in recruitment and assessment of the first matches in the comparison group. The timing problem was combined with the necessity of immediately testing the children in day care because the center opened as the project began. Assembling the measures, particularly the Griffiths Scales, which had to be borrowed to fabricate a temporary duplicate kit until the test kits arrived from England, and training staff in the unfamiliar measures required a minimim period. Fortunately, the slight delay was only slightly longer than the model three to four week day care adaptation period scheduled for all children at entry.

More serious was the delay for the comparison group. Because of the numbers and the complexity of matching procedures, the first recruitment of home reared children in the comparison group necessarily lagged behind the experimental subject assessments by several months. This lag has continued throughout the project because of the fixed interval assessment schedule. The final sample size and number of tests for the cumulative sample of home reared are thus of course slightly below the totals for the day care sample.

The timing factor exercised a further effect on the selection of measures. Although the measures employed, for both children and parents, have been found generally adequate if far from ideal in this and in a prior longitudinal study on infant day care (Fowler, 1972), given the timing and staff resources no original measures designed to harmonize more precisely with program objectives could be constructed. The most that was accomplished was a refinement of the Schaefer and Aaronson infant and parent scales to a seven point system from the original four point system and some later logical realignment of item clusters in the

nonstandardized rating measures. Timing problems are at the very core of longitudinal designs: Once a design is selected and the basic measurement process started, there is no turning back. Data can be rearranged, within limits, but not recreated. Only if alternative measures are later age or stage related measures can they replace originally planned measures. New measures cannot be substituted for original measures on successive cohorts at the same age; nor can new measures be later added to provide complete comparative information. Thus the introduction in our study of the Binet to later cohorts provides a normative base line for developmental comparison, from age two on, but not for the entire sample.

A number of additional problems arose that variously limit the validity of the findings. Their effects are largely unknown and little could be done about them. The first of these is turnover of research staff personnel for personal and professional reasons, including the threat of project termination during Year III. Fortunately not great, turnover has inevitably been concentrated in the curriculum role, which is at the center of frustration and conflict with the day care staff. The main consequences of turnover have of course been shifts in the style of approach to relations, the profiles of competencies and errors and differences in testing reliabilities. Since the primary child tester and data coordinator have remained from the beginning, and much of the child testing and rating during the first two years, when additional child testers were employed, was done jointly, data consistency is moderately high for children and moderate for parent evaluations, considering the duration of the study.

The potential problem of diffusion effects is apparently minimal, given the recruitment of home reared children from birth records drawing on a wide geographical distribution in a large urban, cosmopolitan community. There were, however, various influences differentially inflating and deflating to unknown degrees both day care and home reared rating and test scores. Knowledge of

group membership by evaluators is one, impossible to control because resources required experimental child testing at day care and home reared at home, while requiring parent guidance workers to both rate and guide parents.

The effects of supplementary testing on day care children, both from the frequent concept learning projects and the added Binet is another. The effects might be expected to adapt day care children better to testing and testers, as well as to enhance competence and performance through multiplying experience with sometimes interrelating competencies.

The effects on home reared parents of observing repeated testing and receiving reports on their children's development is still another. Reports to parents, which were considered ethically desirable, were made in the form of both informal comments and written letters. Remarks focused on strengths and limited comments on the child's weak areas of development in terms of the Griffiths Mental test profile, as opposed to prescriptive advice. Nonetheless, the apparent gradual overall home reared group rise in parenting quality and reversal of children's competence score decline suggests a cumulative influence of observation-report effects.

Day Care Program Problems. A number of these same constraints on design inevitably led to program problems, such as the inevitable decline in program level during Year III, from the joint effects of undermined research-day care staff relations and research staff turnover arising from the threat of project termination. But the most serious deviation from the classical laboratory experiment was the planned incorporation of development in the research design. While partly a function of the joint constraints of timing and small research staff resources, one of the central aims of the project was inservice day care staff development, necessitating experimentation with and development of a variety of curriculum methods, materials and teaching-caregiving guides appropriate for

early day care. Program variation and fluctuation were therefore intrinsic to the research design, the effects of which are difficult to analyze because they are confounded with cohort effects.

Assuming this variable framework, it is still useful to estimate the consequences of the various constraints and problems encountered on the pattern and general level of program quality. The most basic cluster of difficulties, constantly working against program quality and for program conflict, stemmed from divided authority. The principal investigator was charged with responsibility to lead program development with day care supervisors and staff whose jobs and roles were decided exclusively by the day care hierarchy, without consultation or notification. The maximum that negotiations yielded was a general instruction to caregivers to "try out" the methods of the research staff, as long as they did not violate staff beliefs in what is good for children. Needless to add conflict was built into the arrangement. Persuasion, appeal and the opportunity to demonstrate were our only tools. The treatment scheduled in the design had constantly to be adapted to the realities of the operating day care system.

And what were these realities? One of the obvious solutions to the dilemma of divided authority was a joint day care-research planning and curriculum committee. This mechanism was repeatedly tried in different forms, always with indifferent success. Aside from the underlying problem of divided authority, the difference in background between members of the two staffs created a seldom bridgeable gulf. One group was task-oriented to care in terms of physical care, health, management and a general prescription to furnish warmth and cuddling that lacked psychological and especially educational definition. The other group was child development and educationally oriented, seeing its role as attempting to understand the complexity of psychological processes and to incorporate cognitive stimulation in a broader framework of play and interpersonal

relations. One index of this difference and the uncertain role definition of day care workers was the wide spread use of the term "staff" in preference to any functional designation, such as caregiver or teacher, both of which were rarely used.

The same gulf cut through all relations, but was always greatest in committees and other group meetings. Most group sessions, whether based on a planned statement by a member of the research staff or open discussion, were met with little discussion by the day care staff and supervisors alike. The gulf in orientation was magnified by differences in verbal skills, but inhibiting the expression of all staff was something alien to a fear of offending the "party line" of the hierarchy. Recent community college graduates of day care early education programs, however, appear to have a broader perspective and understanding of both psychological and cognitive learning processes.

The problems of divided authority and differences in background made formative evaluation particularly difficult to implement. Ratings on teacher-child interactions and implementation of concept stimulation have, as a result, been applied sparingly except in one area. The earlier referred to ratings on the frequency of tutorial sessions by type with infants have probably been so successfully maintained because the activity has a defined focus and the assessment focuses merely on the occurrence of the activity, not the quality of its delivery. The monitoring is moreover self administered and, most important, has been incorporated into the operating rules of infant care by the municipal authority. Ratings on teacher behaviors or teacher-child interactions extending to questions of style, method and competence, on the other hand, while periodically applied have proved less satisfactory. During one three months monitoring project on play, basic caregiving and guided learning, for example, there was resistance over monitoring by research staff and an

interesting convergence of all ratings toward the maximum when self monitoring was adapted. As several caregivers put it in apparent innocence, "When we know we are going to make a record, we do all the steps in a caregiving task well, but we grow lax and forget in the day to day rush of things". The trouble is that one could not keep monitoring all processes indefinitely, even through self monitoring. The process was too costly in both caregiving time and research-day care staff relations.

Relations between the two staffs in group meetings were probably best during discussions of individual children. Day care staff more often displayed moderate interest in preparing advance notes and discussing children for case studies, presumably because of their relative concreteness and shift of direct focus off program. But case studies played a substantially different role, bringing into caregiver awareness a more complex picture of the children's emotional problems, the contributing background factors and how to cope. As a result much communication for the development of cognitive learning programs centered on informal exchanges between teachers and the program development research staff member. Meetings were indispensable to introduce each new theme cycle of the concept learning programs, but whatever involvement was realized was probably generated largely through personal exchanges. Communication on the problems of individual children was similarly enhanced in this context.

Even informal exchanges, however, were complicated by additional institutional constraints that generated conflict for day care workers for any meetings, large or small. The first of these is caregiver-child ratios. The municipal day care authority, perhaps partly influenced by research based standards developed by the principal investigator (Fowler, 1971), informally established ratios of 1:2 for babies up to 18 months and 1:6 for toddlers from 19 to 30 months, allowing as low as 1:8.4 past 30 months. But these are "paper" ratios. The study of "on floor" ratios over a five week period during Year II, that is ratios

based on caregivers right at hand, yielded mean daily ratios of 1:2.5 for babies, 1:5.6 for toddlers and 1:9 for older children. While these values are close to or better than the targeted paper ratios, the ratios for children over 18 months were far short of my recommendations; there were two major consequences for program arising from this pattern. The values realized allowed no scheduled time and little actual time for program preparation and, while relatively adequate for babies, fell increasingly short with age of ratios needed to individualize care and stimulate learning. Meetings, demonstrations and even informal exchanges were taken from time stolen either from caregiving or caregiver lunch and coffee periods. The problem was magnified by an additional, strictly enforced rule that a caregiver must be present in every sleep room when any child is napping. Because of their numbers (6 staff to 12 infants), the problem was relatively manageable with the baby staff, most of whom could attend meetings or participate in a videotape session after lunch for 45 minutes during nap period. But caregivers for toddlers and older children could seldom be spared.

Direct effects on program are evident in two ways. Individualized 5-15 minute tutoring sessions in play with several types of activity (problem solving, creative, sociodramatic and picture story) have been constant in the baby group at the rate of two to three sessions per child per day. In contrast, all cognitive transactions in the other groups have been limited to large group "circle" activities of 6 to 12 children (the toddlers benefiting more often from the lower end of the range), except for the occasional brief guidance normal to supervising play, which babies also get. Throughout the entire five year period, the implementation of program has always been visibly less satisfactory for children past the early infant age group, particularly so past the toddler age group. Unsurprisingly, caregiver development and program monitoring have also been more sensitive problems for caregivers with these age groups. Needing

more help in how to instruct children in the more complex concepts and circumstances required for older children, their ratios set a work schedule that made less research consultation feasible. The second form of evidence shows up in the mental scale score trends, which rise to high average during infancy, particularly in language and problem solving, only to fall back to average after age three, the end of the toddler range. However, motivations continue to rise past age three and, while some socioemotional processes appear to level off, they do so at a high average level.

Ratios were a social fact of day care life, which the means we had available could do little to alter. The much greater cognitive and socioemotional developmental gains in a recently completed three year longitudinal investigation (Fowler, 1972) in an optimum 1:1.5 ratio environment had demonstrated just how pervasive the ratio factor could be. Ratios can be shown to be an important underlying factor in most environments (Fowler, 1975a). The occasional participation of graduate students and research staff in caregiving activities for training and furtherance of cooperative relations could only furnish very temporary relief. A family life education project organized by the research staff during Year I, involving a group of high school students in a seminar and in caregiver roles, provided more permanent support in the forms of municipal decision to expand inservice practice for community college students. The program was irregular, however, addressed more often to babies and sometimes served to fill the substitute role of an absent teacher, rather than supplement existing ratios.

The second serious constraint on communication and program development was excessive rotation of the day care staff. Because it was greatest among staff working with the older age groups, these high turnover rates further eroded the already tenuous program with these groups. An analysis of teacher turnover rates during Year IV revealed a rising rate from the baby staff to the older age

groups, ranging from a complete turnover for the former to double turnover for the three to four year level. While the municipal authority was quite aware of the multiple problems generated by these rates, the rapid expansion of day care facilities during the period made the problem difficult to solve. Research treatment had to give way to social demand. The most we could negotiate was a relatively greater stability in the baby care group over the first two program years. The negative impact on program centered on the impossibility of building and maintaining a constant high level of care, either in educational or socio-emotional terms. Needless to say, the efforts of the research staff were expended disproportionately in just keeping a minimum program going. Progressing to higher levels was out of the question after Year II, even in the baby group, given the continuing demands to start from a beginning level with a number of new teachers every few weeks or so. The limited child development, education-oriented background of entering staff, combined with the divided authority, of course magnified the difficulties. The entire arrangement was a constant source of frustration for day care and research staff alike. The year III Environmental Profile overall program evaluation disclosed that staff rotation was the single most discouraging factor inhibiting caregiver involvement in program quality. Even teachers who were highly motivated could commit themselves neither psychologically nor programmatically. Just as they would begin to form close relations and identify the concept and personal needs of the children in their group, they would be promoted or transferred.

While space was an important problem, making arrangements for specialized activities, movement and psychological testing awkward, it was never seen as the inhibitor of program the other constraints were. The most serious limitation was probably the lack of a separate playroom contiguous to the play rooms for testing the experimental learning projects. One tiny room down the hall could

be employed only occasionally because it served many other purposes. Research offices and experimental rooms, which were permanently set up for videotaping, one-way observation, testing and learning projects, had to be located in the somewhat gloomy basement of an adjacent church. Adaptation to the unfamiliar was always prolonged by the trip through an uninviting underground type passage and the remoteness of the research site from the normal play area. Accompanying tots with caregivers helped but stole time from normal caregiver duties. The distance and atmosphere also set up a further barrier to casualness of relations between caregivers and researchers, for example, making the visit of a caregiver for her own videotaping more of a formal demand. Limited space within each play room or in adjacent areas placed restrictions on locating program materials close to activity sites. Extra shelves were constructed high up for this purpose, but Parkinson's Law was inexorable in play rooms whose space averaged less than 30 square feet per child.

Certain areas of program development, such as language stimulation, supervision of free play, and multicultural and sexist awareness, met with particular resistance throughout the project, related to both institutional constraints and caregiver understanding and style. Inducing caregivers to talk freely to infants was a continuing challenge. Not normally talkative on the job, except informally with their peers, caregivers were inclined to feel self-conscious talking to babies who at best could respond only in occasional single words. Their limited verbal academic orientation appeared to make it difficult for them to grasp the developmental importance of a language rich environment directed toward the infant's referential world. Repeated demonstrations and discussions, as with many other aspects of program made only partial headway.

The problem with play was the tendency for caregivers to either watch infants from a distance while sitting or nurture only their sensory and dependency

needs by hugging and cuddling. Again, their training had hardly prepared them to understand the complex and non-obtrusive anticipatory and mediating skills required to stimulate and maintain children in constructive play and social interaction. Caregivers did better beginning with naturally less dependent toddlers, but failed to include much sociodramatic play. The chronic problem with infants included a disinclination to set out and arrange by functional areas a sufficient variety of toys. Convincing day care authorities early in the program, citing medical opinion, that toys need not be washed at the end of each day or even weekly brought forth toys more regularly but did not solve the workload problem of tidying. Numbers and variety continued to be rationed, particularly near activity transition periods and during the last two hours of the day. Given institutional constraints, little headway could be made in inducing caregivers to see the value of working toward socializing infants on tidying, to combine social development with beginning to learn sorting and ordering concepts.

Early in the investigation, the increase in admissions from a broadening array of cultures led to research emphasis on multicultural awareness. Given the diversity of Caribbean blacks and East Indians, Orientals, southern Europeans and French Canadian families, strategy seemed confined to developing staff sensitivity to the value of diversity rather than development of full scale culturally defined programs. The principal activities consisted of encouraging frequent open discussion, informally and formally, at meetings about the types and value of cultural differences. The parent guidance worker assumed a central role in communicating with caregivers about cultural-familial styles, language needs and especially cross sex role development. Parents were encouraged to maintain their own language at home through reassurance that English would be (as it has been) readily mastered through the day care experience. While food,

dress, language and other perhaps more visible cultural artifacts have created little conflict, even being occasionally included in the program, problems of style and child rearing modes have been core problems, since the latter, variously easy or strict, tradition oriented modes become perceived contrary to good forms of child rearing. Development of understanding or at least a live and let live approach has probably progressed most through case study discussions, reinforced by the parent worker and the occasional multi-cultural pot luck suppers shared in by both parents and all caregiver and research staff. The stress in boy-girl socialization has been upon encouraging cross sex role experiences, block, mechanical and occupational play for girls and interpersonal, language and creative play for boys. The all feminine environment in day care, combined with institutional constraints, has prevented development of the individualizing and sociodramatic occupational and related play needed for development of such programs in depth.

Underlying many of these problems of inservice and program development is an institutional ethos of order, efficiency and centralization of control. The problem was not alone divided authority, work load, and differences in caregiver educational background and goals, though all of these contributed importantly in ways I have described. The municipal day care system is highly organized from a central office whose rules are mediated by traveling inspectors who regularly check on the operations of each day care center. While this method has advantages, mainly in the form of maintaining uniform minimum standards of care and nutrition, it has obvious pitfalls. Innovation, variety and the ratio of effort on long range developmental goals to effort on immediate task accomplishment tend to be sacrificed. The inspiration that healthy young children normally inspires does much to counter this trend, but the concept of the days work

and getting the task done too often dominate in the absence of local autonomy. Studies in residential care in Britain have shown caregiver autonomy to be an important variable motivating the quality of early child care (Tizard, et al, 1972). Supervisors are bound to the hierarchy and caregivers at the assistant levels are bound to the supervisors in one smoothly operating but perhaps over efficient system. This trend toward organizational efficiency is a central concern for the future of young children in group care. The child appears to face a dilemma between gross unevenness of care and stimulation in the intimacy of the home and too even and organized professionalism in group systems, without lows but also without highs.

Parent Guidance Problems

Problems emerging in the course of developing the program of parent guidance were different in character and magnitude from problems encountered in day care, principally because the goals were more modest. From its inception, parent guidance was essentially adjunctive to day care. It was designed to prevent and solve developmental problems and to enhance parenting skills and coordinate them with the modes of day care practice. While the stress was as much on cognitive and language stimulation as on constructive interpersonal care, no attempt was made to introduce sequenced concept learning programs of the type repeatedly attempted for day care, nor to monitor the frequency and quality of guided play sessions parents were encouraged to employ.

The problems were largely of two sorts, each of which took several forms. One set was related to individual differences in the quality and intensity

of response to guidance on child care. The other was intrinsic to the role of single, working mothers of limited education and resources, rearing children and utilizing day care in a large urban environment. Parent guidance could no more than ease problems of the latter type, which were manifold through providing continuing support, guidance and trouble shooting with the myriad of social agencies serving parents varying needs for welfare, housing, job retraining and placement, immigration status, medical care and the like. Such chronic needs as threat of job loss through absence from a child's illness might be helped by day care accepting a child with a slight cold or helping to locate permanent, emergency home babysitter services. The loneliness of single status, particularly for a woman and an immigrant could be eased by occasional socials at the center, both for the total parent set and for informal problem discussion groups. Guidance and social needs were both served on the same occasion.

One of the long range strategies pursued in our search for a permanent vehicle to work on the multiple problems endemic to single parent working mothers was group organization. Parents were encouraged to form a continuing committee to meet for both social and family problem solving purposes. The group became quite active during the first two years of the project, serving among other things to aid parents in pressing social agencies for needed services. Subsequent cohorts have been less involved, however, through members of the original group have continued to support public day care during recent government budget cutting efforts to reduce ratios and cut back on day care. Little headway has been made, however, on efforts to develop a parent voice in day care curriculum.

Problems of differential response to guidance on child care ranged from apathy and indifference to hostility. Most parents fell somewhere between, however, endorsing the relationship with the research investigation with varying degrees of enthusiasm. The low attrition rate (< 8% per year) and consistently

high turnout of the single, working parents for night meetings of all kinds, from about half to more than three quarters for pot luck suppers, is perhaps the best evidence of this continuing involvement. The use of a toy kit and demonstrations of play interaction with the child in the home, a circulating toy library, toy donations, advice on making and using household items as toys, encouraging parents to find private time for themselves each evening as well as time for play with the child, and discussion of child guidance in the context of helping to solve family problems all have appeared to contribute to establishing a generally adequate baseline level of care.

Few parents have developed high levels of care and cognitive stimulation, however, and perhaps a quarter to half the parents failed to attain good base line levels, usually for one of two reasons. Underlying family problems operated in both cases, but in one the problem was skill level and coping, while in the other resentment and lack of interest played greater roles. The energy expended with the latter minority was typically greater than with all other families, but fortunately seldom without some longterm improvement, such as developing a more positive relation between parent and child and/or between parent and day care staff, together with a better grasp of how to work with the child in day care.

Because problems with the poor copers were somehow never quite solved, during Year IV a specialized strategy of guidance for these parents was devised. Six families were identified whose parenting skill problems varied from poor cognitive stimulation to overprotectiveness and high indulgence. Visits were intensified from an every 4 to 6 weeks basis to a twice a month basis over a two month period and more detailed guidance tailored to individual needs was worked out. Although not a controlled study, five of the six children showed consistent cognitive and socioemotional gains over the six months span during which the

intensive guidance period fell, compared to their previous levels.

Recent evidence has emerged suggesting that parenting performance is dropping off with older children, a factor presumably contributing to the regression to average cognitive levels of the day care children after age three. In the nature of the longitudinal basis for this investigation, the information has emerged too late to do much about it. Hindsight tells us that more effort has been consistently devoted to families during the extended infant period, because of the constant arrival of new cohorts, than to families during the preschool period. There is also the general phenomenon that a little attention, of the kind defining the low intensity guidance in this project, may have more impact on infant parenting than preschool parenting. Our efforts are probably well beyond those culturally prescribed for infants, but less than those needed to maintain the early established cognitive developmental rates. The preschool child's capacity to absorb concept learning sequences is considerably beyond what the project has, for different reasons, been able to engage either day care teachers or parents to deliver. Thus the reversion to cultural norms for the social class level.

Benefits of Local Day Care Evaluation

The Findings. The outcomes of research on day care are, as in many things, many-sided. On the findings themselves, on the face of it, day care rearing is about as effective as home rearing in facilitating early development. Keeping in mind the methodological limitations we have discussed, development in all areas, after three years, was at just over four years about equal for day care and home reared children in all areas, ranging from average to above average in various aspects of cognitive, language, socioemotional and motivational development. These apparent outcomes leave many questions unsettled, however, and the findings themselves are not simple and straightforward.

For one thing, mental development in day care was superior during infancy than after age three in all aspects of competence. This pattern is a reversal of expectations that presumably more fragile and dependent infants would be more vulnerable to separation from the maternal bonds and individualized care in a familiar home environment. While it is possible to conclude that the later day care declines result from the cumulative effects of a less personalized multiple care environment, there is more direct evidence to suggest other factors operating during later periods are responsible. Among these are a sharp decline in the quality of adult-child caregiver ratios past infancy, coupled with increased staff turnover and an observed lowering of program quality. Some declines were also evident in the quality of parenting among day care parents. Thus it would appear that a multiple care setting for infants can be a highly positive mode in which to rear children. Whether day care could be as salutary past infancy, given an improvement in arrangements and staff competence in educational modes, would require further empirical testing. A core problem appears to rest in the more complex concept learning demands of older children, which non-educationally trained day care workers and single parent, working class working mothers find more difficulty in meeting.

For another thing, day care curves are on a declining trend past age three while home reared curves are on a rising trend. While differences are not yet significant, the trends are nonetheless of concern, particularly if differences become significant when data on total samples for all periods are collected. The implications of these reversing trends underscore the importance of reappraising the quality of the day care program past infancy. The most positive longterm developmental outcomes for the day care children are found in the maintenance of consistently above midpoint levels of functioning in motivation and socioemotional processes and above average levels in language and gross motor competencies. The apparent decline of fine motor and practical reasoning (mainly counting and measurement) skills to below average remains of concern.

The apparently rising home reared trend, while possibly partly a function of repeated testing coupled with reports to parents, should probably be sought in the parental modes themselves. After all, day care children experience more extensive testing, day care parents benefit from intensive, detailed guidance and tester bias would be expected to favor day care children. An additional explanation for the later home reared mean score rise is a shift with age in parent perception of their children's cognitive needs. Testers report home reared parents become more involved with attention to concept activities after age three, partly related to the spur of the children's response to Sesame Street type programs, experiences which children attending all day care are less exposed to. Thus, while our limited parent guidance has been adequate to alter the ordinary parent's perception of the cognitive needs of infants, it has failed to match the cultural press parents in the home appear to encounter. Junior kindergarten might contribute to the rise, despite ratios even less favorable than those in day care, because of its greater educational orientation than day care, except that the trend begins well before the minimum

enrollment age and only 20.9 per cent of the home reared children have enrolled in day care or school by the final testing period on which data is available.

Still another limitation of the findings arises from the specialized quality of this day care program. The combined longterm effects of special attention, programs and support of research activity and personnel in themselves generate a quality of environment probably superior to but in any case like that of no ordinary center. We must ask the question, are other infant day care programs as adequate and other preschool programs in Canada and elsewhere even less adequate than this research based program? For some answers to this question, we must turn to the development aspects of the investigation.

Program Development and Dissemination. Whatever the completed findings will show, many things have happened in the investigation, some positive, some negative, that may influence, indeed have already influenced the field, at least regionally. Perhaps the most general effect is the project's contribution to public realization that day care can make possible a serious alternative to welfare and home care and baby sitting for working mothers. The project's very existence, publicized through the press and professional sources, has promoted infant day care and tended to legitimize earlier established preschool day care. This effect is distinct from the question of the actual adequacy of care. Taking day care seriously is an important precondition to establishing effective day care programs in the Canadian and U.S. climate, which places great weight on the role of mothers caring for children in the home. Many Eastern and Western European countries have passed much of this hurdle some time ago.

Equal in importance is the evidence martialled that at least infant day care can be a viable alternative to home care. Ultimately, day care cannot be taken seriously unless it can be shown to be an adequate form of child care.

Over the years, the considerable positive publicity on the project has centered on the quality of infant care. Whether public or professional groups will now be able to discriminate the positive and negative developmental effects at the two levels remains to be seen. The most likely prediction is that day care workers and needful working mothers may emphasize the infant outcomes, while the currently strong business oriented budget cutters and tradition bound interest groups will seize on the preschool findings to try to phase out day care.

But whatever the public reaction, certainly one of the more significant benefits of a study of this kind has been to demonstrate the potential that public day care can provide at the infant level. Far from representing a threat to development and undermining home care, the investigation suggests that the multiple adult-child and peer relations in day care, given planning, inservice staff training and an integrated interpersonal sensitivity and educational orientation, facilitate development as well or better than home care alone at infancy more than later on. Moreover, home care is not undermined apparently improved for infants attending day care, despite the single parent versus intact family status of day care versus home reared children. The value of parent guidance is obviously implicated.

Additional factors, for which there is monitoring evidence that they contributed to the quality of children's development, are the modified individualized care arrangement and the diagnostic monitoring caregiver feedback system. The former provides a method of assigning child responsibility and developing caregiver developmental interest in individual children, which proved beneficial in enhancing development, as evidenced by indices of developmental progression and by staff enthusiasm and agency permanent adoption of the method. The latter provides a continuing system of comprehensive monitoring of children's psychological processes and caregiver styles (cognitive styles, motivations

for learning and social relations), which aided in the continuing identification of problem areas and further maintenance of developmental progression of both children and caregivers.

The evidence the study provides on the value of adequate adult-child ratios and educational orientations should help to define what needs to be done to develop quality day care programs. The interacting problems of ratios, rotation and limited educational orientation of the day care staff, which combined to restrict both time and involvement in inservice training and program development, indicates the direction caregiver training and program quality must take. The importance of these directions for the entire span of early development suggests a cost not limited to the widely expressed concern for infants alone.

One solution to the cost problem, discussed recently by the principle investigator (Fowler, 1975a), is suggested by the success of the family life education program carried out during the investigation. Widespread involvement of high school boys and girls, both of whom need practical exposure to methods of child care, would go far to solving the problem of ratios and raising program educational levels. Fewer but better and more educationally trained professionals, given sufficient local autonomy to insure motivation and promote stability of program and care (Tizard, et al, 1972), could easily mount and maintain quality with the numbers of young people available. Students have been shown to be highly adaptable to care needs and the inclusion of males would go far to eliminate the all female environment.

The evidence of the importance of parent guidance, seen in the numerous correlations between changing parenting scores and indices of children's development and the evident success of the preventive work with children's special problems, underlines a further dimension of quality day care. While institutional

aloofness may be adequate on reaching school age, the bridge of guidance between the cultural-familial personal styles of the home and the formal planned styles of professional group care appears extremely beneficial to minimize problems and reconcile the methods and curriculum of home and day care. Again, the study suggests that efforts on this dimension must be well maintained as much in the preschool period as during infancy to match the improvement in home care recorded for day care infants.

The list of benefits that may be attributed to the investigation encompasses many products and processes. Foremost among them are the practices directly adopted by the municipal day care system for the entire network of centers. These include the practice of daily guided learning activities for infants; the adoption of our teacher guides on basic care routines and supervising play (Fowler and Biderman, 1972, 1973); adoption of quality ratios (1:2) for infants; adoption and fabrication of furniture designs (tables and chairs) for infants; and the adoption of partial individualized caregiver responsibility for children (the last two in some centers). Indirectly, many program practices have been adopted through the high teacher turnover, which, while undermining the research based program, has contributed to the inservice development of a host of new caregivers spread throughout the rapidly expanding system. Many of these same guides and practices have been requested by and distributed to day care and other early education systems throughout Canada and abroad. Various other curriculum components, including a language educational film, videotapes and materials, and assessment devices, many of them referred to earlier, were developed and experimented with in the course of the investigation, and have been circulated or are in preparation for publication. Graduate student and research assistant education over several years is a further benefit from the project. The opportunities to combine educational practice with research

is one of the special strengths of this type of longitudinal research and development educational investigation.

Finally, there are the special benefits experienced and disseminated, of the applied research process itself. One may consider whatever value accrues from attempting to steer through the maze of social reality with the aid of the experimental paradigm. Is it a guide or a barrier? The answer mostly depends on whether one reacts in horror as a purist to the abuse of a model or whether one sees the model as a flexible tool to be adapted and expanded to guide one's efforts to study developmental processes in situ.

References

- Bayley, N. Bayley scales of infant development (with Infant Behavior Record). New York: The Psychological Corporation, 1969.
- Caldwell, B.M. Inventory of home stimulation, 1969.
- Campbell, D.T. & Stanley, J.C. Experimental and quasi-experimental designs for research on teaching. In N.L. Gage (Ed.) Handbook of research on teaching. Chicago: Rand McNally, 1963, No. 5.
- Fowler, W. Cognitive orientation toward childrearing. Ontario Institute for Studies in Education, 1968.
- Fowler, W. Demonstration program in infant care and education (September 1968-June 1971); Final Report. Ontario Institute for Studies in Education, Toronto, 1971.
- Fowler, W. A developmental learning approach to infant care in a group setting. Merrill-Palmer Quarterly, 1972, 18, 145-175.
- Fowler, W. How adult/child ratios influence infant development. Interchange, Vol. 6, No. 1, 1975. (a).
- Fowler, W. Principles and practices of early developmental care and stimulation. OISE, 1975. (Mimeo.) (b).
- Fowler, W. & Khan, N. et al. The development of a prototype infant, preschool and child day care center in Metropolitan Toronto; Year I Progress Report: Program Development, OISE, 1972.
- Fowler, W. & Khan, N., et al. Diagnostic-developmental monitoring system. OISE, 1975.
- Fowler, W. & Ogston, K. Environmental standards index for quality group care and education of young children. OISE, 1975.
- Fowler, W. & Biderman, E. Developmental methods for physical care routines with infants. Ontario Institute for Studies in Education, 1972.
- Fowler, W. & Biderman, E. Free play activities: Guide for organization and supervision of infants and preschool children. Ontario Institute for Studies in Education, 1973.
- Griffiths, R. The abilities of babies. London: University of London Press, 1954.
- Griffiths, R. The abilities of young children. Great Britain: Child Development Research Centre, 1970.

Schaefer, E.S. & Aaronson, M. Infant behavior inventory. Laboratory of Psychol., National Institute of Mental Health, U.S. Department, HEW. (Unpublished), 1967.

Schaefer, E.S & Aaronson, M. Mother's behavior with tutor and child during tutoring sessions. Laboratory of Psychology, National Institute of Mental Health, U. S. Department, HEW (Unpublished), 1967.

Tizard, B., Cooperman, O., Joseph, A. & Tizard, J. Environmental effects on language development: A study of young children in longstay residential nurseries. Child development, 1972, 43, 337-358.

Weininger, O. Some preliminary findings on the constancy of intelligence in infants. Ontario Psychologist, 1970.

Figure 1: Comparison of Mean Competence Scores for Day Care and Home Reared Children Over Nine Test Periods Time 1 Time 9 (Unmatched Pairs) ($\bar{X}$ Ages 11 to 64 Months)

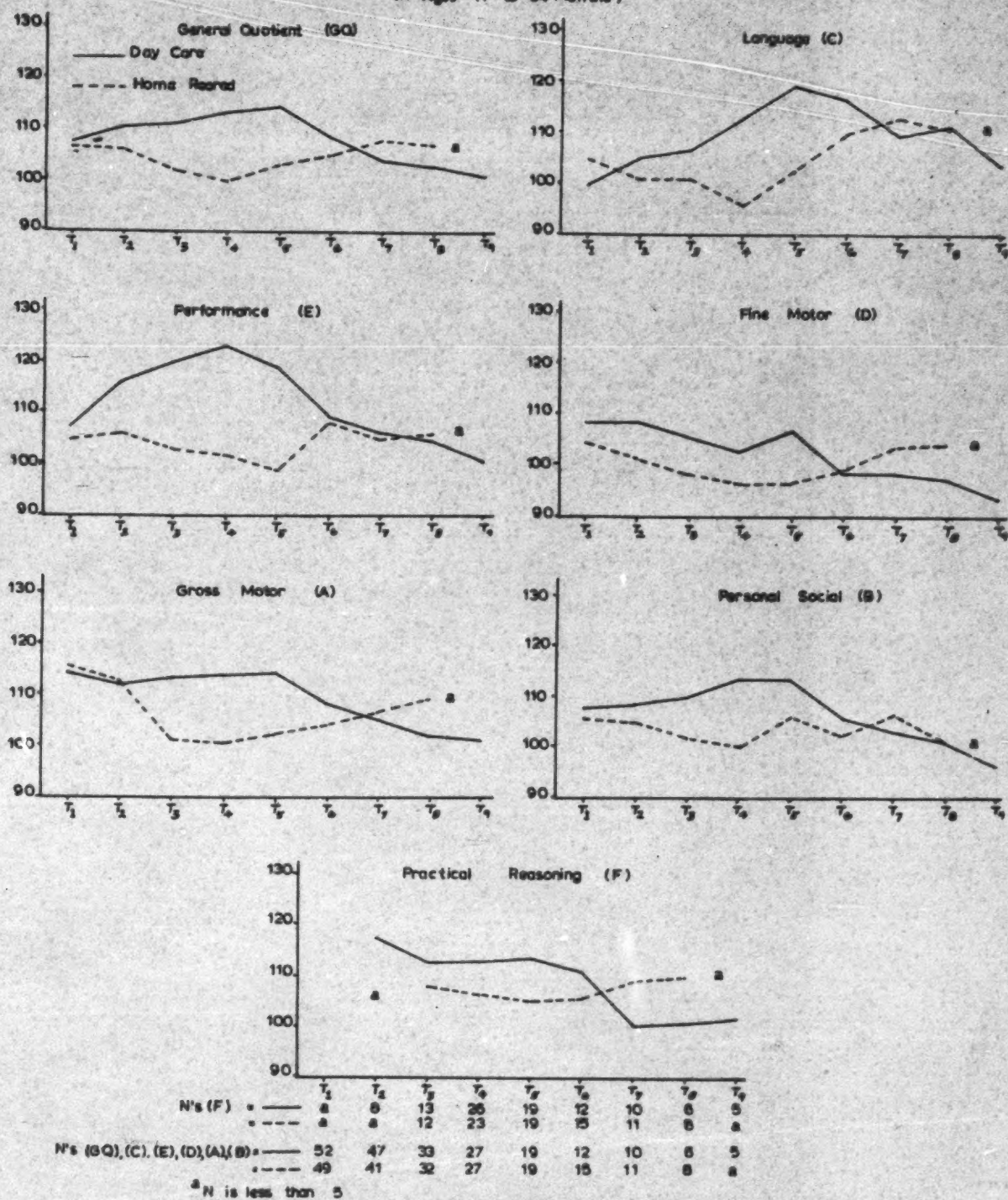


Figure 2: Means of Day Care and Home Reared (Matched Pairs) Children's Scores on Clusters of Bayley Infant Behavior Characteristics from Time 1 to Time 6 ($\bar{X}$ Ages = 11 - 44 Months)

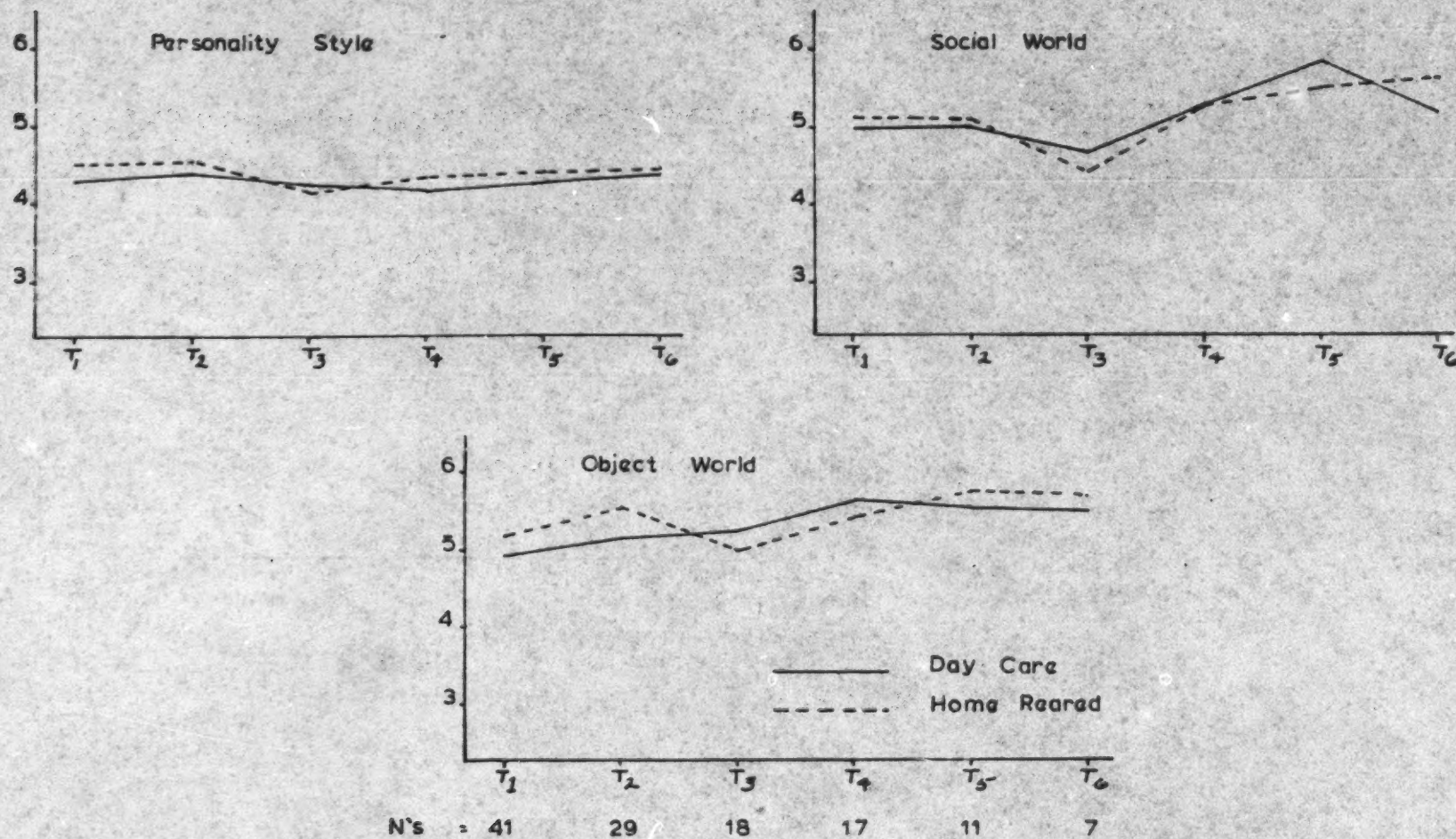


Figure 3: Means of Day Care and Home Reared (Matched Pairs) Children's Scores on Selected Characteristics from Time 1 to Time 6
($\bar{X}$ Ages = 11-44 Months)

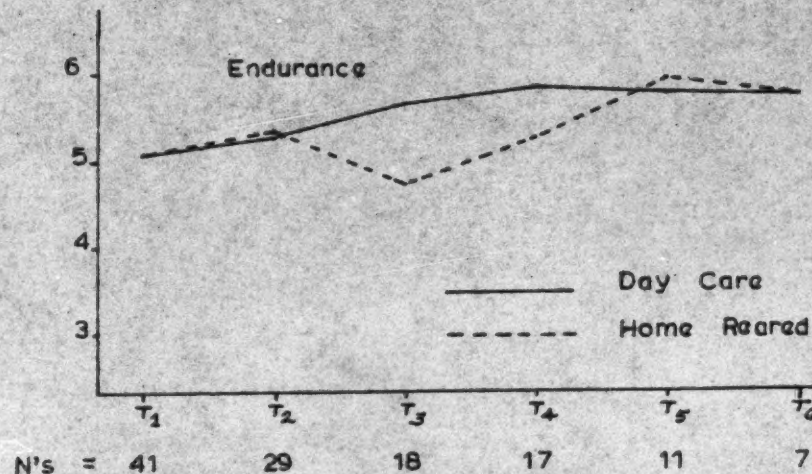
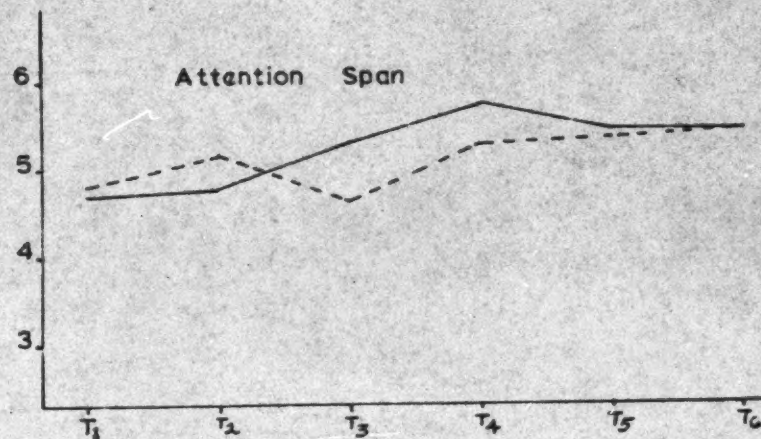
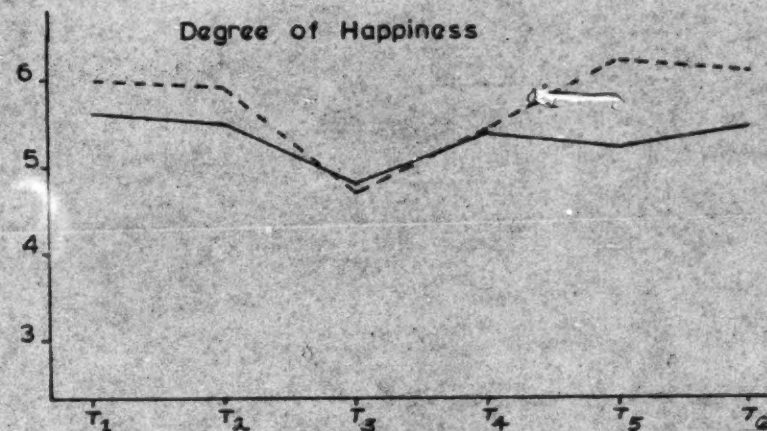
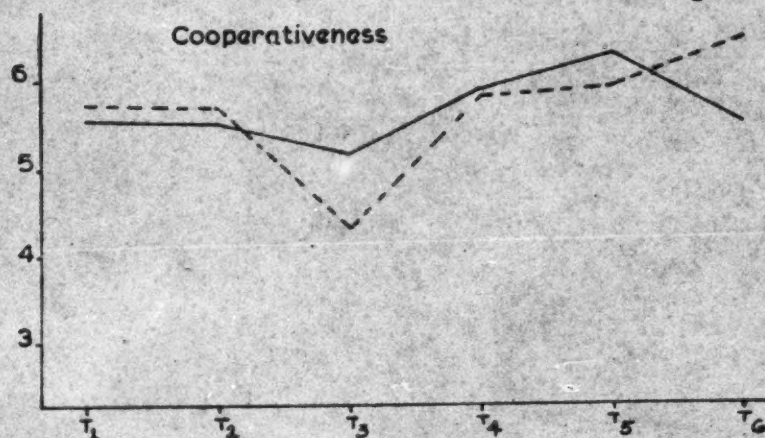
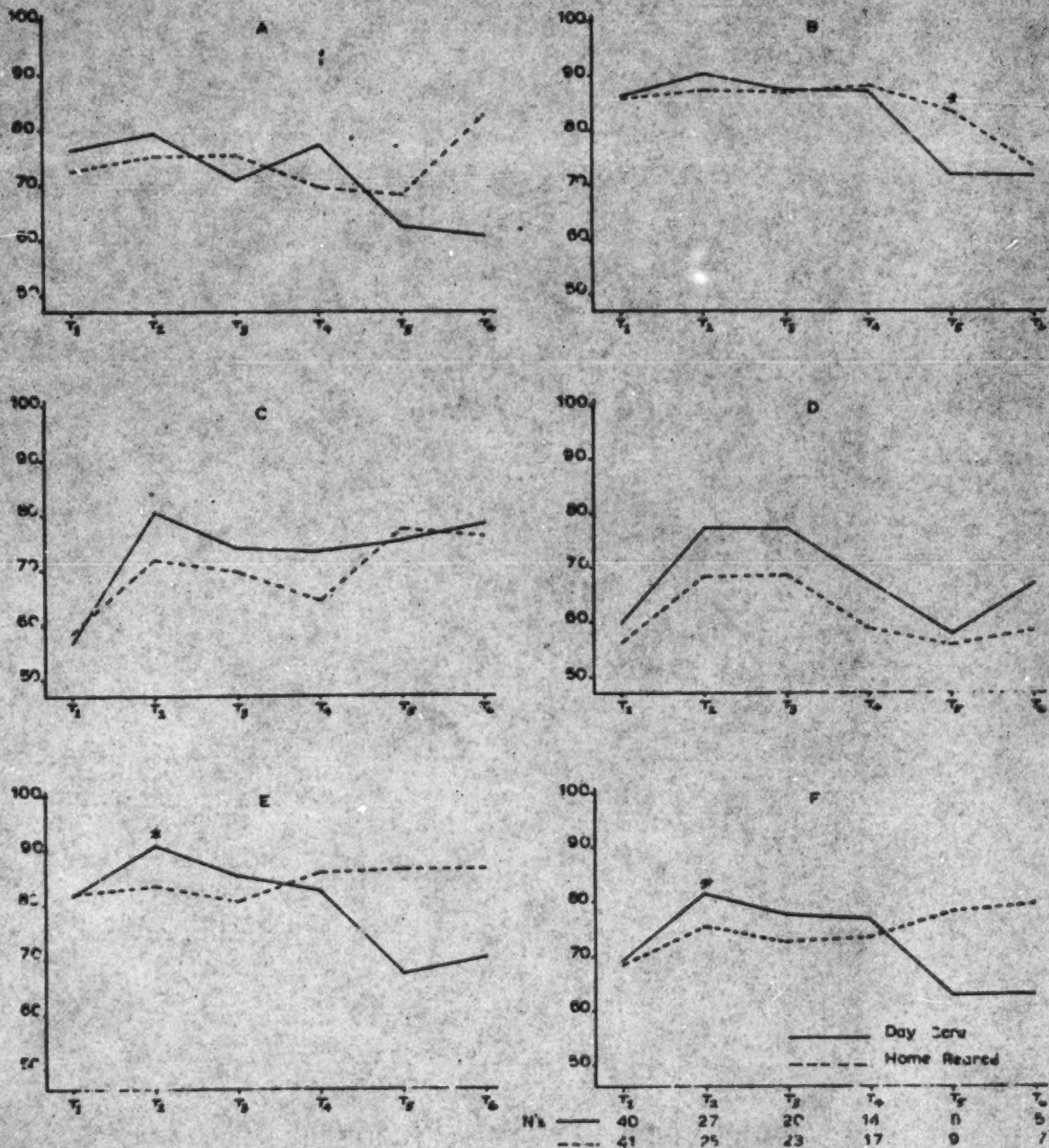


Figure 4:

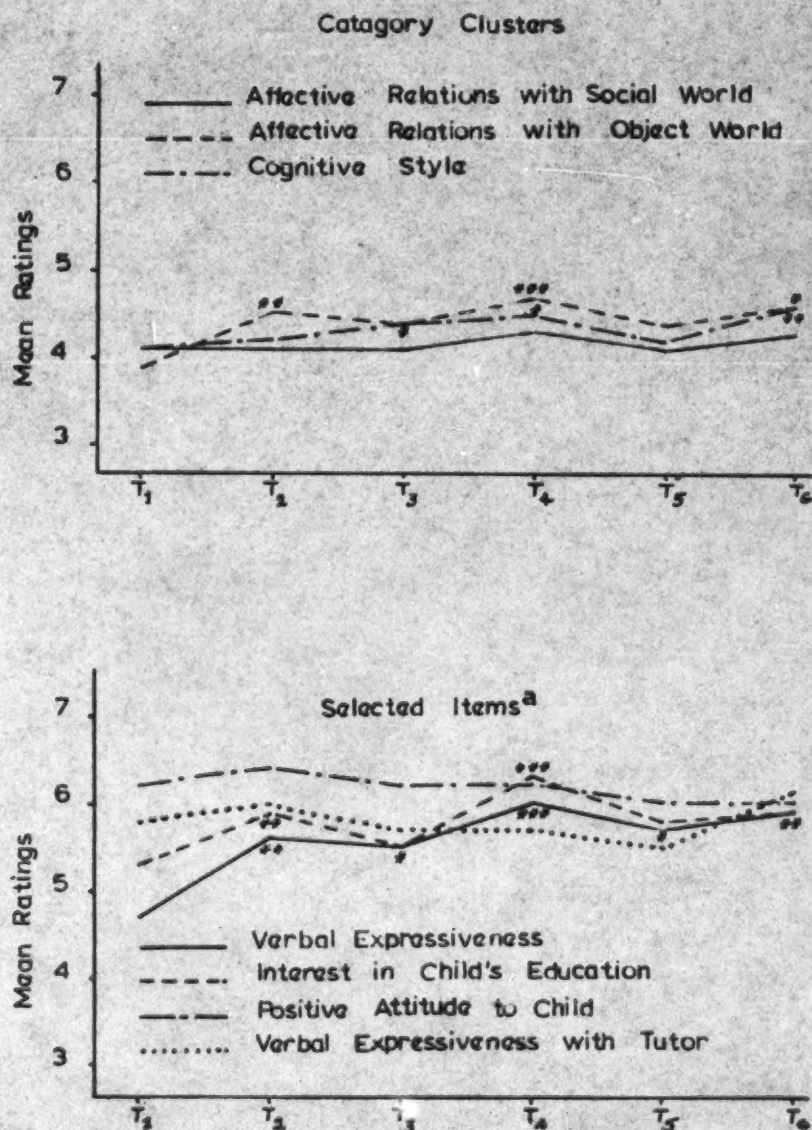
Mean Ratings of Day Care and Home Reared Families
Caldwell Inventory of Home Stimulation over Six Test Periods



- A Need gratification and avoidance of restriction and punishment
B Breadth of experience and organization of physical and temporal environment
C Provision of appropriate play materials
D Maternal involvement in developmental stimulation of the child
E Quality of language environment and emotional responsiveness of mother
F Average of all Caldwell Scales

Differences favoring higher rating
significant: * $p < .05$

Figure 5: Mean Ratings of Day Care Mothers on Category Clusters and Selected Items of Schaefer and Aaronson Maternal Behavior Inventory over Six Test Periods



Significance levels (F tests) on changes from initial testing (T₁): * $\leq .05$

** $\leq .01$

*** $\leq .001$

Ns range from 35 to 47 for T₁-T₂ to 10 to 41 for T₁-T₆ comparisons.

^aItems which have had significant mean differences in the past.

Table 1: Mean Ratings of Day Care and Home Reared Families on Caldwell Inventory of Home Stimulation over Six Test Periods

Combined Categories		T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₁ -T ₂	T ₁ -T ₃	T ₁ -T ₄	T ₁ -T ₅	T ₁ -T ₆
General personality Style	X	4.4	4.8	4.5	4.6	4.4	4.4	8.35**	.39	1.80	.00	.03
	S.D.	.70	.52	.69	.62	.40	.34					
Relations with Social World	X	4.7	4.7	4.4	4.7	5.0	4.8	0.06	2.37	.00	2.88	.15
	S.D.	.73	.70	.85	.66	.52	.87					
Relations with Object World	X	4.5	4.9	5.1	5.1	5.0	5.0	9.02**	15.16***	15.44***	11.73***	9.25**
	S.D.	.50	.57	.77	.69	.50						
Cognitive Style	X	3.7	4.2	4.1	4.6	4.9	5.3	3.61	1.44	6.99**	11.23***	9.32**
	S.D.	1.41	1.31	1.45	1.07	.85	.63					
Perceptual Motor	X	3.90	4.12	3.50	4.13	4.11	4.29	3.58	1.60	4.01	3.50	5.13*
	S.D.	.81	.54	.51	.61	.69	.60					
Selected IBR Items ^a												
Cooperativeness	X	5.6	5.6	5.5	6.1	6.7	6.1	.08	.03	1.60	6.52**	1.06
	S.D.	1.38	1.46	1.82	1.54	1.68	2.02					
Degree of Happiness	X	5.6	5.5	5.2	5.5	5.5	5.4	.24	1.41	.05	.04	.18
	S.D.	1.61	1.43	1.67	1.65	1.36	1.08					
Goal Directedness	X	4.8	4.9	5.4	5.8	5.7	5.6	.05	4.28*	10.21**	6.41**	3.13
	S.D.	1.27	0.86	1.10	.96	1.10	1.35					
Attention Span	X	5.1	5.2	5.8	5.9	6.0	5.9	.30	7.63**	8.44**	9.17**	4.95*
	S.D.	1.07	1.02	.99	.99	.92	1.10					
Selected S&A Items ^a												
Verbal Expressiveness	X	3.2	5.2	4.8	5.5	6.0	6.3	27.41***	15.38***	29.46***	37.23***	21.28***
	S.D.	1.70	1.70	1.75	1.20	.71	.93					
Inquisitiveness	X	4.9	6.0	6.1	6.0	6.1	6.2	28.41***	25.63***	17.21***	17.00***	10.16**
	S.D.	1.02	.84	.78	.71	.52	.41					
Persistence	X	4.0	5.4	5.5	5.7	5.8	6.0	26.12***	22.84***	25.11***	22.84***	14.15***
	S.D.	1.4	1.07	1.06	.82	.65	.26					
Distractability	X	3.7	3.9	3.6	3.7	3.6	3.3	.30	.04	.01	.06	.57
	S.D.	1.42	1.56	2.05	1.89	2.08	1.65					
Contentment	X	5.7	6.0	5.8	5.4	5.4	5.3	3.31	.54	.99	1.01	.91
	S.D.	.95	.51	1.00	1.25	.49	1.05					
Enthusiasm	X	4.6	5.9	5.4	5.5	5.6	5.5	28.41***	7.26**	7.10**	9.48**	3.19
	S.D.	1.27	.88	1.30	1.41	.65	.90					
Hyperactivity	X	4.5	5.5	4.5	4.3	3.7	3.2	4.0**	7.07	.10	1.11	1.92
	S.D.	2.32	2.30	2.43	2.03	1.95	2.08					
Belligerence	X	5.4	4.4	3.8	3.4	3.4	3.3	5.26*	8.90**	12.41***	10.79**	6.18*
	S.D.	2.17	1.85	2.17	1.86	1.45	1.75					
Concentration	X	4.5	5.5	5.8	5.2	5.9	6.1	13.21***	20.41***	4.64*	17.08***	12.18***
	S.D.	1.15	1.26	1.06	1.34	.90	.54					

Significance levels evaluated through F-tests

* $\leq .05$
 ** $\leq .01$
 *** $\leq .001$

Ns range from 35 to 47 for T₁-T₂ to 10 to 41 for T₁-T₆ comparisons.

^aItems on which significant mean differences have typically appeared in the past.